



## REMR TECHNICAL NOTE EM-MM-1.1

(Replaces TN dated 9/87)

## LUBRICANTS FOR HYDRAULIC STRUCTURES

PURPOSE: To describe a program developed to provide guidance in the selection of lubricants to be used on Corps hydraulic structures.

BACKGROUND: US Army Corps of Engineers' field installations continually ask questions about lubricants for civil works hydraulic structures. Personnel from several districts have reported poor performance of given lubricants and are concerned about the compatibility of alternate lubricants. Synthetic lubricants are being marketed more extensively in recent years, and Corps installations are questioning the advisability of switching to more expensive synthetic lubricants. In response to these concerns, a program was developed to provide uniform guidance for specifying and using lubricating oils and greases on Corps hydraulic structures.

DESCRIPTION: Phase I of the program was directed toward learning what lubricants were being used by the Corps as well as the type of equipment being lubricated. To obtain this information, a questionnaire was sent to all Corps installations with hydraulic structures. Installations were also asked to supply photocopies of the two engineering forms (ENG 2468 and ENG 2469) required by the Project Operations Maintenance Guide, ER 1130-2-303. Information on any onsite lubricant evaluations or test programs that may have been conducted by the installation as well as points of contact for further coordination were requested.

Phase II consisted of first reviewing the responses to the questionnaire regarding the type of lubricants used and the machinery lubricated. Secondly, equipment manufacturers and lubricant producers were contacted for their input regarding lubrication. Finally specific problems indicated by the responses to the questionnaire were addressed.

RECOMMENDATIONS: Based on their study, the program committee concluded that

- Field personnel need guidance on interpreting procurement rules.
- Guidance should encourage the use of available technical services.
- Particular brands can be specified to avoid mixing lubricants.
- Greases can be specified on the basis of comparative results.

If oil is used over long periods of time and in large quantities, periodic tests to determine that the oil still meets acceptable standards are recommended. Freedom to procure lubricants suitable to local conditions is recommended, since Corps installations are spread over a broad range of geographic and climatic conditions.

CONCLUSION: Technical Report REMR-EM-5, "Lubricants for Hydraulic Structures," provides guidance in the selection of lubricants. It has charts of interchangeable lubricants, viscosity, and grade conversion.

REFERENCE: Clifton, W. B. and Beitelman, A. 1989. "Lubricants for Hydraulic Structures," Technical Report REMR-EM-5, US Army Construction Engineering Research Laboratory, Champaign, IL.